

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

1. (Previously Presented) For use in a fusing station of an electrostatographic machine, an elastically deformable fusing-station roller, said fusing-station roller comprising:

a core member, said core member being substantially rigid and having a cylindrical outer surface;

a base cushion layer, said base cushion layer formed on said core member;

a protective layer coated on said base cushion layer;

wherein said base cushion layer is a thermally cured polyorganosiloxane material made by an addition-polymerization of an uncured formulation, said uncured formulation including hollow filler particles in form of microballoons having flexible walls, said microballoons having a predetermined hollow-filler concentration in said uncured formulation, and said uncured formulation further including solid filler particles;

wherein the thermal conductivity of said base cushion layer is in a range of approximately between 0.2 BTU/hr/ft/ $^{\circ}$ F - 0.7 BTU/hr/ft/ $^{\circ}$ F; and

wherein said addition-polymerization of said uncured formulation is carried out at a temperature below 100 $^{\circ}$ C.

2. (Original) The fusing-station roller of Claim 1, wherein said solid filler particles include strength-enhancing filler particles.

3. (Original) The fusing-station roller of Claim 2, wherein said strength-enhancing filler particles are members of a group including particles of silica, zirconium oxide, boron nitride, silicon carbide, and tungsten carbide.

4. (Original) The fusing-station roller of Claim 2, wherein said fusing-station roller is one of an externally heated fuser roller and a pressure roller, and wherein said strength-enhancing filler particles have a concentration in

said uncured formulation in a range of approximately between 15% - 40% by weight.

5. (Original) The fusing-station roller of Claim 2, wherein said fusing-station roller is an internally heated fuser roller and wherein said strength-enhancing filler particles have a concentration in said uncured formulation in a range of approximately between 5% - 10% by weight.

6. (Original) The fusing-station roller of Claim 1, wherein said solid filler particles include thermal-conductivity-enhancing filler particles.

7. (Original) The fusing-station roller of Claim 6, wherein said thermal-conductivity-enhancing filler particles are selected from a group including particles of aluminum oxide, iron oxide, copper oxide, calcium oxide, magnesium oxide, nickel oxide, tin oxide, zinc oxide, graphite, carbon black, and mixtures thereof.

8. (Original) The fusing-station roller of Claim 6, wherein said fusing-station roller is one of an externally heated fuser roller and a pressure roller, and wherein said thermal-conductivity-enhancing filler particles have a concentration in said uncured formulation in a range of approximately between 10% - 40% by weight.

9. (Original) The fusing-station roller of Claim 6, wherein said fusing-station roller is an internally heated fuser roller and wherein said thermal-conductivity-enhancing filler particles have a concentration in said uncured formulation in a range of approximately between 40% - 70% by weight.

10. (Original) The fusing-station roller of Claim 1, wherein said microballoons in said uncured formulation are distinguishable by at least one size.

11. (Original) The fusing-station roller of Claim 1, wherein said microballoons in said uncured formulation have diameters of up to approximately 120 μm .

12. (Original) The fusing-station roller of Claim 1, wherein said predetermined hollow-filler concentration of said microballoons is in a range of approximately between 0.25% - 3.0% by weight in said uncured formulation.

13. (Original) The fusing-station roller of Claim 12, wherein said predetermined hollow-filler concentration of said microballoons is in a range of approximately between 0.5% - 1.5% by weight in said uncured formulation.

14. (Original) The fusing-station roller of Claim 1, wherein said addition-polymerization is carried out at a temperature which does not substantially exceed 80°C.

15. (Original) The fusing-station roller of Claim 1, wherein said microballoons comprise a polymeric material, said polymeric material polymerized from monomers selected from the following group of monomers: acrylonitrile, methacrylonitrile, acrylate, methacrylate, vinylidene chloride, and combinations thereof.

16. (Original) The fusing-station roller of Claim 1, wherein said flexible walls of said microballoons include finely divided particles selected from a group including inorganic particles and organic polymeric particles.

17. (Currently Amended) The fusing-station roller of Claim 1, wherein said base cushion layer comprises a ~~highly~~ crosslinked polydimethylsiloxane.

18. (Original) The fusing-station roller of Claim 17, wherein said fusing-station roller is a fuser roller, said fuser roller being externally heated.

19. (Previously Presented) The fusing-station roller of Claim 18, wherein:

said fuser roller is provided with an auxiliary internal source of heat; and

said thermal conductivity of said base cushion layer in a range of approximately between 0.2 BTU/hr/ft/°F - 0.5 BTU/hr/ft/°F.

20. (Previously Presented) The fusing-station roller of Claim 19, wherein:

said thermal conductivity of said base cushion layer is in a range of approximately between 0.2 BTU/hr/ft/°F - 0.4 BTU/hr/ft/°F.

21. (Original) The fusing-station roller of Claim 17, wherein said fusing-station roller is a fuser roller, said fuser roller being internally heated.

22. (Previously Presented) The fusing-station roller of Claim 21, wherein:

said fusing-station roller is provided with an auxiliary internal source of heat; and

said thermal conductivity of said base cushion layer is in a range of approximately between 0.2 BTU/hr/ft/°F - 0.7 BTU/hr/ft/°F.

23. (Original) The fusing-station roller of Claim 22, wherein:
said thermal conductivity of said base cushion layer is in a range of approximately between 0.2 BTU/hr/ft/°F - 0.5 BTU/hr/ft/°F.

24. (Cancelled) For use in a fusing station of an electrostatographic machine, an elastically deformable pressure roller, said pressure roller comprising:

a core member, said core member being substantially rigid and having a cylindrical outer surface;

a base cushion layer, said base cushion layer formed on said core member;

a protective layer coated on said base cushion layer;

wherein said base cushion layer is a thermally cured polyorganosiloxane material made by an addition-polymerization of an uncured formulation, said uncured formulation including hollow filler particles in form of microballoons having flexible walls, said microballoons having a predetermined hollow-filler concentration in said uncured formulation, and said uncured formulation further including solid filler particles; and

wherein said addition-polymerization of said uncured formulation is carried out at a temperature below 100°C.

25. (Cancelled) The pressure roller of Claim 24, wherein a thermal conductivity of said base cushion layer is in a range of approximately between 0.12 BTU/hr/ft/°F - 0.2 BTU/hr/ft/°F.

26. (Original) The fusing-station roller of Claim 17, wherein a thickness of said base cushion layer is in a range of approximately between 0.05 inch - 0.35 inch.

27. (Original) The fusing-station roller of Claim 17, wherein said fusing-station roller is one of an externally heated fuser roller and a pressure roller, and wherein a Shore A durometer of said base cushion layer is in a range of approximately between 30 - 50.

28. (Original) The fusing-station roller of Claim 17, wherein said fusing-station roller is an internally heated fuser roller, and wherein a Shore A durometer of said base cushion layer is in a range of approximately between 30 - 75.

29. (Original) The internally heated fuser roller of Claim 28, wherein said Shore A durometer of said base cushion layer is in a range of approximately between 50 - 70.

30. (Original) The fusing-station roller according to Claim 1, wherein said protective layer comprises a chemically unreactive, low surface energy, flexible, polymeric material suitable for high temperature use.

31. (Previously Presented) For use in a fusing station of an electrostatographic machine, an elastically deformable fusing-station roller, said fusing-station roller comprising:

a core member, said core member being substantially rigid and having a cylindrical outer surface;

a base cushion layer, said base cushion layer formed on said core member;

a protective layer coated on said base cushion layer;
wherein said base cushion layer is a thermally cured polyorganosiloxane material made by an addition-polymerization of an uncured formulation, said uncured formulation including hollow filler particles in form of microballoons having flexible walls, said microballoons having a predetermined hollow-filler concentration in said uncured formulation, and said uncured formulation further including solid filler particles;

wherein said protective layer comprises a chemically unreactive, low surface energy, flexible, polymeric material suitable for high temperature use;

wherein said protective layer is a gloss control layer;
a thermal conductivity of said gloss control layer is in a range of approximately between 0.07 BTU/hr/ft/°F - 0.11 BTU/hr/ft/°F; and

a thickness of said gloss control layer is in a range of approximately between 0.001 inch - 0.004 inch; and

wherein said addition-polymerization of said uncured formulation is carried out at a temperature below 100°C.

32. (Original) The fusing-station roller of Claim 31, wherein said gloss control layer comprises a fluoropolymer.

33. (Original) The fusing-station roller of Claim 32, wherein said fluoropolymer is a random copolymer, said random copolymer made of monomers of vinylidene fluoride (CH_2CF_2), hexafluoropropylene ($\text{CF}_2\text{CF}(\text{CF}_3)$), and tetrafluoroethylene (CF_2CF_2), said random copolymer having subunits of:

— $(\text{CH}_2\text{CF}_2)x$ —, — $(\text{CF}_2\text{CF}(\text{CF}_3))y$ —, and — $(\text{CF}_2\text{CF}_2)z$ —,

wherein,

x is from 1 to 50 or from 60 to 80 mole percent of vinylidene fluoride,

y is from 10 to 90 mole percent of hexafluoropropylene,

z is from 10 to 90 mole percent of tetrafluoroethylene, and

x + y + z equals 100 mole percent.

34. (Original) The fusing-station roller of Claim 33, wherein:

said gloss control layer comprises a particulate filler;

said particulate filler has a particle size in a range of approximately between 0.1 μm - 10 μm ;

said particulate filler has a total concentration in said gloss control layer of less than about 20% by weight;

said particulate filler includes zinc oxide particles and fluoroethylenepropylene resin particles;

said zinc oxide particles have a concentration in a range of approximately between 5% - 7% by weight; and

said fluoroethylenepropylene resin particles have a concentration in a range of approximately between 7% - 9% by weight.

35. (Original) The fusing-station roller according to Claim 1, wherein said solid filler particles have a mean diameter in a range of approximately between 0.1 - 100 μm .

36. (Original) The fusing-station roller according to Claim 35, wherein said solid filler particles have a mean diameter in a range of approximately between 0.5 - 40 μm .

37. (Previously Presented) For use in a fusing station of an electrostatographic machine, an elastically deformable fusing-station member, said elastically deformable fusing-station member comprising:

a substrate;

a base cushion layer, said base cushion layer formed on said substrate;

a protective layer coated on said base cushion layer;
wherein said base cushion layer is a thermally cured polyorganosiloxane material made by an addition-polymerization of an uncured formulation, said uncured formulation including hollow filler particles in the form of microballoons having flexible walls, said microballoons having a predetermined hollow-filler concentration in said uncured formulation, and said uncured formulation further including solid filler particles;

wherein the thermal conductivity of said base cushion layer is in a range of approximately between 0.2 BTU/hr/ft/ $^{\circ}$ F - 0.7 BTU/hr/ft/ $^{\circ}$ F; and

wherein said addition-polymerization of said uncured formulation is carried out at a temperature below 100 $^{\circ}$ C.

38. (Withdrawn) A method of making a fusing-station member for use in a fusing station of an electrostatographic machine, said fusing-station member formed from a substrate, a base cushion layer adhered to said substrate, and a protective layer coated on said base cushion layer, said method comprising the steps of:

mixing of ingredients so as to produce an uncured formulation, said ingredients including: a vinyl-substituted polyorganosiloxane, a silane-substituted polyorganosiloxane, about 1 - 100 parts per million by weight of a platinum curing catalyst, flexible hollow filler particles, strength-enhancing solid filler particles, and thermal-conductivity-enhancing solid filler particles, wherein said flexible hollow filler particles have a concentration in said uncured formulation of about 0.25% - 3% by weight;

degassing said uncured formulation;

contacting said substrate with a thermally curable layer of said uncured formulation, said substrate priorly coated with a uniform coating of an adhesive primer, said contacting coincident with forming said thermally curable layer with a uniform thickness on said substrate;

ramp heating said thermally curable layer and said substrate from a room temperature to an elevated temperature, said elevated temperature not greater than 100 $^{\circ}$ C;

continuing to heat said thermally curable layer and said substrate at a temperature not greater than 100°C until said thermally curable layer is fully cured via an addition-polymerization reaction;

cooling said thermally curable layer and said substrate to a room temperature so as to obtain said base cushion layer as an addition-polymerized layer adhered to said substrate; and

coating said protective layer on said base cushion layer.

39. (Withdrawn) The method according to Claim 38, wherein said flexible hollow filler particles have an expanded